Unit-2 Mastery Assessment (version 619)

Question 1 (10 points)

Let f represent a function. If $f[44] = 21$, then there exists a knowable solution to the equation below.

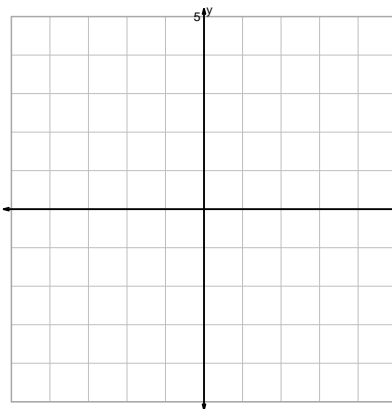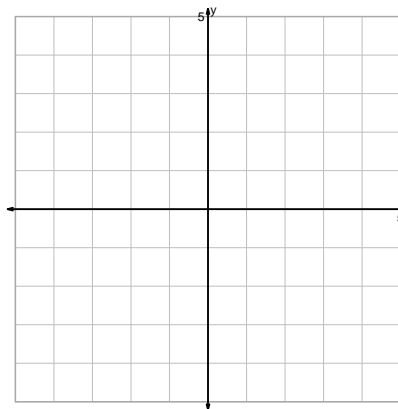$$y = 2 \cdot f[5x + 29] + 8$$

Find the solution.

$x =$

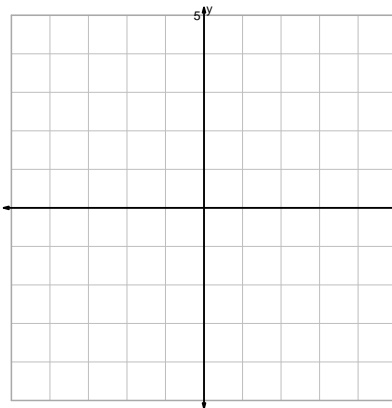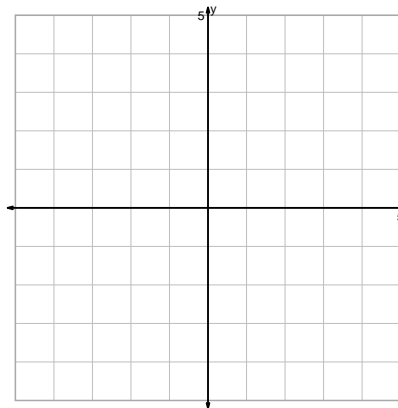$y =$

Question 2 (20 points)

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.
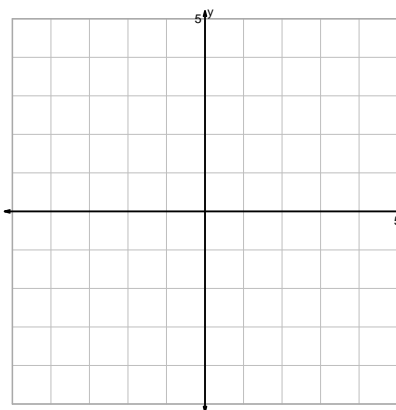
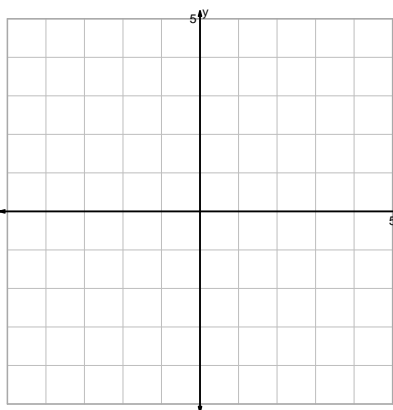$y = \left(\dfrac{x}{2}\right)^3$

$y = \sqrt[3]{x+2}$
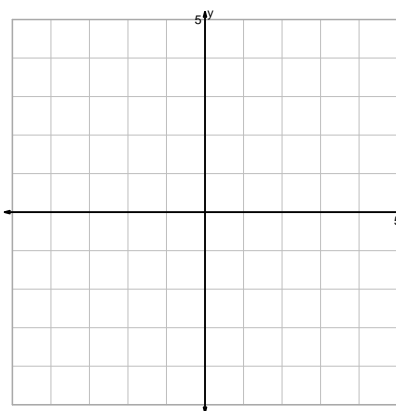
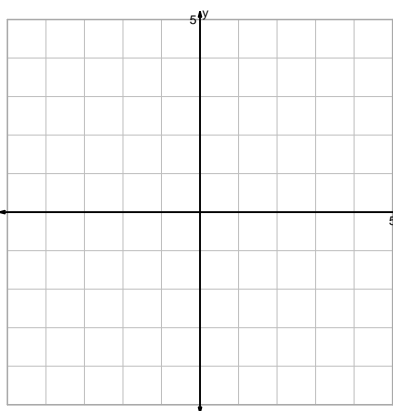$y = x^2 + 2$

$y = 2 \cdot \log_2\!\left(x\right)$

$y = 2^x - 2$

$y = \dfrac{x^2}{2}$
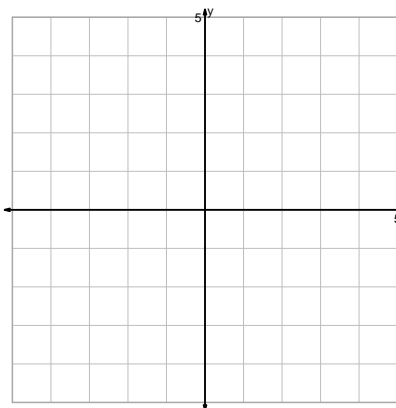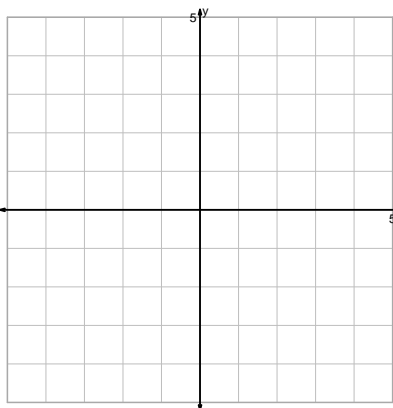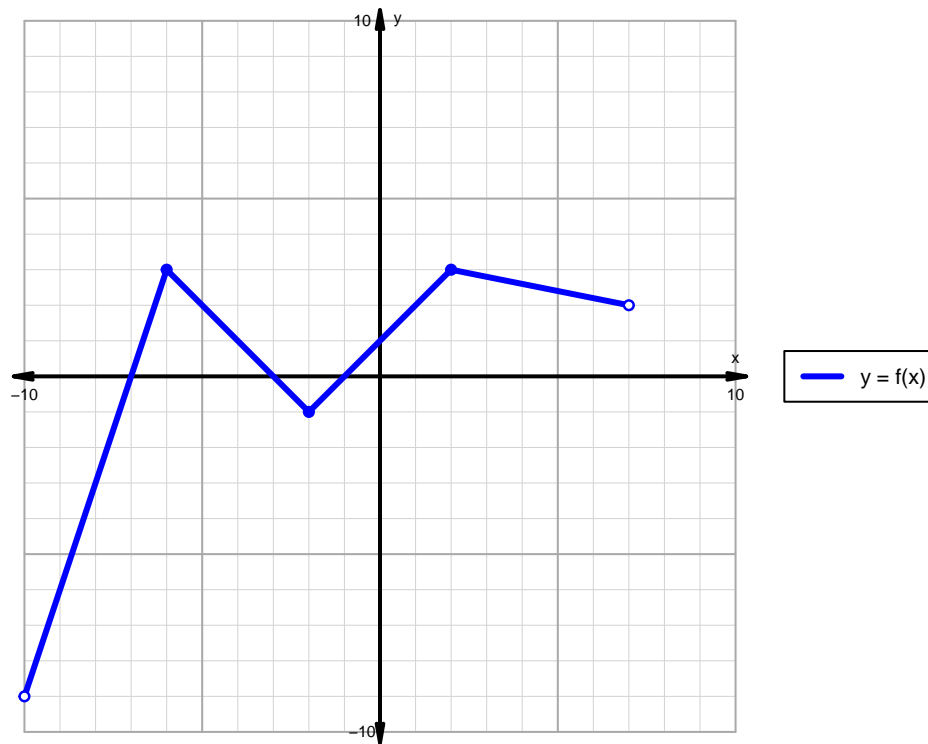
$y = 2^{-x}$

$y = \sqrt[3]{2x}$

$y = -\sqrt{x}$

$y = \sqrt{x-2}$

Question 3 (20 points)

A function is graphed below.

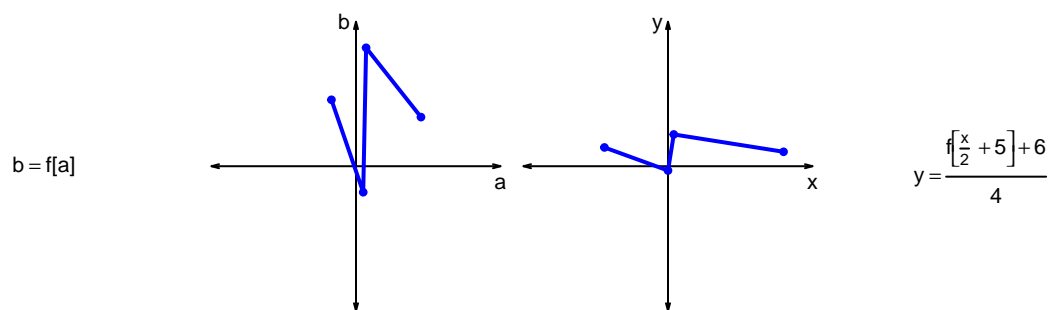Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4 (20 points)

Let f represent a function. The curves $b = f[a]$ and $y = \frac{f\left[\frac{x}{2}+5\right]+6}{4}$ are represented below in a table and on graphs.

a	b	x	y
-17	46	-44	13
5	-18	0	-3
7	82	4	22
45	34	80	10

$b = f[a]$

$y = \frac{f\left[\frac{x}{2}+5\right]+6}{4}$

a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = \frac{f\left[\frac{x}{2}+5\right]+6}{4}$?

Question 5 (10 points)

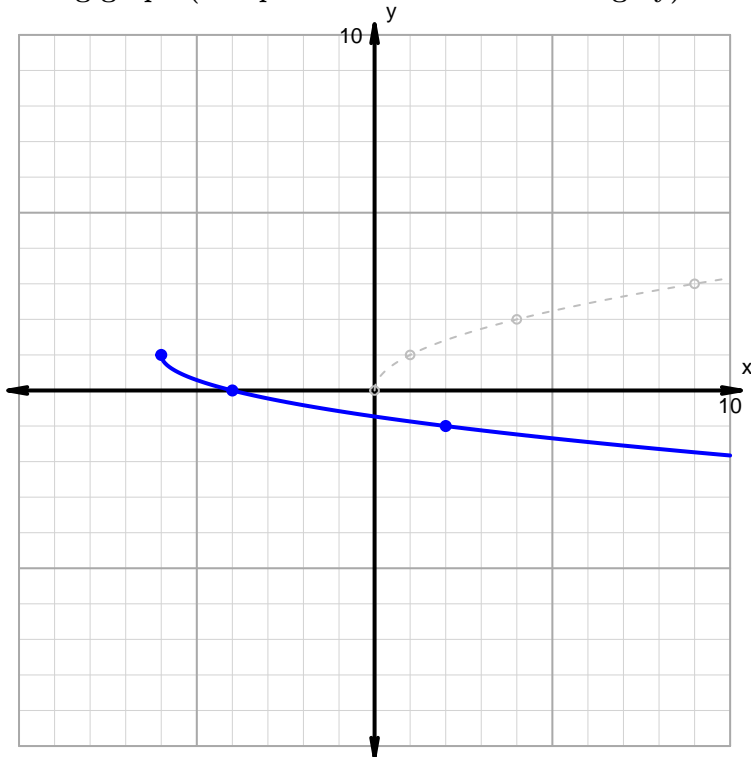A parent square-root function is transformed in the following ways:

Horizontal transformations

1. Translate left by distance 3.
2. Horizontal stretch by factor 2.

Vertical transformations

1. Vertical reflection over x axis.
2. Translate up by distance 1.

Resulting graph (and parent function in dashed grey):

- What is the equation for the curve shown above?

Question 6 (20 points)

Make an accurate graph, and describe locations of features.

$$y = 2 \cdot |x + 6| - 2$$

Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	